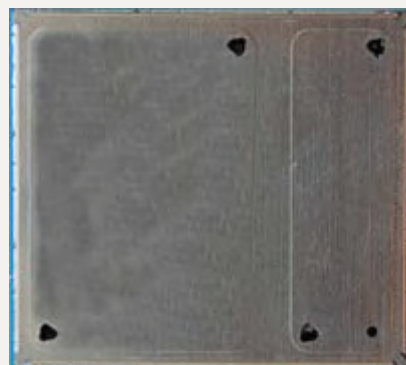


HW Differences between Cinterion® ALAS5-AM Rev. 1.2 and ALAS5V- US Rev. 1.2

Delta Report

Version: 01
DocID: ALAS5-AM_rev12_ALAS5V-US_rev12_hw_delta_v01



Document Name: **HW Differences between Cinterion® ALAS5-AM Rev. 1.2 and
ALAS5V-US Rev. 1.2**

Version: **01**

Date: **June 24, 2019**

DocId: **ALAS5-AM_rev12_ALAS5V-US_rev12_hw_delta_v01**

Status: **Confidential / Released**

GENERAL NOTES

THE PRODUCT INCLUDING THE SOFTWARE PROVIDED BY GEMALTO M2M GMBH (“GEMALTO M2M”) WITH THE PRODUCT (“PRODUCT”) IS DEEMED ACCEPTED BY RECIPIENT AND IS PROVIDED WITHOUT INTERFACE TO RECIPIENT’S PRODUCTS. THE DOCUMENTATION AND/OR PRODUCT ARE PROVIDED FOR TESTING, EVALUATION, INTEGRATION AND INFORMATION PURPOSES.

COPYRIGHTS

THE SOFTWARE OBTAINED FROM GEMALTO M2M TOGETHER WITH THE PRODUCT (“SOFTWARE”) IS THE INTELLECTUAL PROPERTY OF GEMALTO M2M AND/OR ITS LICENSORS.

LIMITED LICENCE GRANT

SUBJECT TO THE TERMS AND CONDITIONS IN THIS AGREEMENT, THE RECIPIENT, ITS CUSTOMERS AND END-CUSTOMERS OF THE PRODUCT SHALL HAVE A NON-EXCLUSIVE RIGHT TO USE THE PRODUCT OBTAINED FROM GEMALTO M2M. THE RECIPIENT SHALL NOT AND SHALL CONTRACTUALLY BIND ITS CUSTOMERS AND THE END-CUSTOMERS NOT TO TRANSFER, COPY, MODIFY, TRANSLATE, REVERSE ENGINEER, CREATE DERIVATIVE WORKS, DISASSEMBLE OR DECOMPILE THE SOFTWARE OR OTHERWISE USE THE SOFTWARE EXCEPT AS SPECIFICALLY AUTHORIZED BY THE PURPOSE OF THIS AGREEMENT OR BY MANDATORY LAW. GEMALTO M2M SHALL BE A THIRD PARTY BENEFICIARY IN THE AGREEMENTS WITH CUSTOMERS AND END-CUSTOMERS REGARDING THE SOFTWARE. ANY RIGHT, TITLE AND INTEREST IN AND TO THE PRODUCT, OTHER THAN THOSE EXPRESSLY GRANTED TO THE RECIPIENT UNDER THIS AGREEMENT, SHALL REMAIN VESTED WITH GEMALTO M2M OR ITS THIRD PARTY LICENSORS. GEMALTO M2M IS NOT OBLIGED TO MAKE THE SOURCE CODE OF THE SOFTWARE AVAILABLE TO THE RECIPIENT.

DISCLAIMER OF WARRANTY

THE DOCUMENTATION AND/OR PRODUCT ARE PROVIDED ON AN “AS IS” BASIS ONLY AND MAY CONTAIN DEFICIENCIES OR INADEQUACIES. THE DOCUMENTATION AND/OR PRODUCT ARE PROVIDED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, GEMALTO M2M FURTHER DISCLAIMS ALL WARRANTIES, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, COMPLETENESS, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF THIRD-PARTY RIGHTS. THIS PRODUCT IS NOT INTENDED FOR USE IN LIFE SUPPORT APPLIANCES, DEVICES OR SYSTEMS WHERE A MALFUNCTION OF THE PRODUCT CAN REASONABLY BE EXPECTED TO RESULT IN PERSONAL INJURY. APPLICATIONS INCORPORATING THE DESCRIBED PRODUCT MUST BE DESIGNED TO BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS PROVIDED IN THESE GUIDELINES. FAILURE TO COMPLY WITH ANY OF THE REQUIRED PROCEDURES CAN RESULT IN MALFUNCTIONS OR SERIOUS DISCREPANCIES IN RESULTS. FURTHERMORE, ALL SAFETY INSTRUCTIONS REGARDING THE USE OF MOBILE TECHNICAL SYSTEMS, INCLUDING GSM AND GPS PRODUCTS, WHICH ALSO APPLY TO CELLULAR PHONES MUST BE FOLLOWED. GEMALTO M2M CUSTOMERS USING THIS PRODUCT FOR USE IN ANY APPLICATIONS DO SO AT THEIR OWN RISK AND AGREE TO FULLY INDEMNIFY GEMALTO M2M FOR ANY DAMAGES RESULTING FROM ILLEGAL USE.

EXCLUSION OF LIABILITY

GEMALTO M2M, ITS LEGAL REPRESENTATIVES AND VICARIOUS AGENTS SHALL – IRRESPECTIVE OF THE LEGAL GROUND – ONLY BE LIABLE FOR DAMAGES IF THE DAMAGE WAS CAUSED THROUGH CULPABLE BREACH OF A MAJOR CONTRACTUAL OBLIGATION (CARDINAL DUTY), I.E. A DUTY THE FULFILMENT OF WHICH ALLOWS THE PROPER EXECUTION OF THE RESPECTIVE AGREEMENT IN THE FIRST PLACE OR THE BREACH OF WHICH PUTS THE ACHIEVEMENT OF THE PURPOSE OF THE AGREEMENT AT STAKE, RESPECTIVELY, AND ON THE FULFILMENT OF WHICH THE RECIPIENT THEREFORE MAY RELY ON OR WAS CAUSED BY GROSS NEGLIGENCE OR INTENTIONALLY. ANY FURTHER LIABILITY FOR DAMAGES SHALL – IRRESPECTIVE OF THE LEGAL GROUND – BE EXCLUDED. IN THE EVENT THAT GEMALTO M2M IS LIABLE FOR THE VIOLATION OF A MAJOR CONTRACTUAL OBLIGATION IN THE ABSENCE OF GROSS NEGLIGENCE OR WILFUL CONDUCT, SUCH LIABILITY FOR DAMAGE SHALL BE LIMITED TO AN EXTENT WHICH, AT THE TIME WHEN THE RESPECTIVE AGREEMENT IS CONCLUDED, GEMALTO M2M SHOULD NORMALLY EXPECT TO ARISE DUE TO CIRCUMSTANCES THAT THE PARTIES HAD KNOWLEDGE OF AT SUCH POINT IN TIME. GEMALTO M2M SHALL IN NO EVENT BE LIABLE FOR INDIRECT AND CONSEQUENTIAL DAMAGES OR LOSS OF PROFIT. GEMALTO M2M SHALL IN NO EVENT BE LIABLE FOR AN AMOUNT EXCEEDING € 20,000.00 PER EVENT OF DAMAGE. WITHIN THE BUSINESS RELATIONSHIP THE OVERALL LIABILITY SHALL BE LIMITED TO A TOTAL OF € 100,000.00. CLAIMS FOR DAMAGES SHALL BECOME TIME-BARRED AFTER ONE YEAR AS OF THE BEGINNING OF THE STATUTORY LIMITATION PERIOD. IRRESPECTIVE OF THE RECIPIENT'S KNOWLEDGE OR GROSS NEGLIGENT LACK OF KNOWLEDGE OF THE CIRCUMSTANCES GIVING RISE FOR A LIABILITY ANY CLAIMS SHALL BECOME TIME-BARRED AFTER FIVE YEARS AS OF THE LIABILITY AROSE. THE AFOREMENTIONED LIMITATION OR EXCLUSION OF LIABILITY SHALL NOT APPLY IN THE CASE OF CULPABLE INJURY TO LIFE, BODY OR HEALTH, IN CASE OF INTENTIONAL ACTS, UNDER THE LIABILITY PROVISIONS OF THE GERMAN PRODUCT LIABILITY ACT (*PRODUKTHAFTUNGSGESETZ*) OR IN CASE OF A CONTRACTUALLY AGREED OBLIGATION TO ASSUME LIABILITY IRRESPECTIVE OF ANY FAULT (GUARANTEE).

SECRECY

THE RECIPIENT UNDERTAKES FOR AN UNLIMITED PERIOD OF TIME TO OBSERVE SECRECY REGARDING ANY INFORMATION AND DATA PROVIDED TO HIM IN THE CONTEXT OF THE CONTRACTUAL RELATIONSHIP AND CLASSIFIED AS CONFIDENTIAL OR OTHERWISE RECOGNISABLE AS CONFIDENTIAL, IN PARTICULAR AS TRADE OR COMPANY SECRET AND – AS FAR AS NOT NECESSARY FOR THE ACHIEVEMENT OF THE PURPOSE OF THE CONTRACT – TO NEITHER RECORD NOR FORWARD TO THIRD PARTIES NOR USE IN ANY WAY. EMPLOYEES AND THIRD PARTIES INVOLVED SHALL BE BOUND TO OBSERVE THE ABOVE PROVISIONS.

MISCELLANEOUS

THE INTERPRETATION OF THIS GENERAL NOTE SHALL BE GOVERNED AND CONSTRUED ACCORDING TO GERMAN LAW WITHOUT REFERENCE TO ANY OTHER SUBSTANTIVE LAW. LEGAL VENUE FOR ALL DISPUTES ARISING FROM THIS AGREEMENT SHALL BE MUNICH, GERMANY. IN THE EVENT OF A CONFLICT BETWEEN THE PROVISIONS OF THIS AGREEMENT AND ANOTHER AGREEMENT REGARDING THE PRODUCT (EXCEPT THE GENERAL TERMS AND CONDITIONS OF GEMALTO M2M) THE OTHER AGREEMENT SHALL PREVAIL.

Copyright

Transmittal, reproduction, dissemination and/or editing of this document as well as utilization of its contents and communication thereof to others without express authorization are prohibited. Offenders will be held liable for payment of damages. All rights created by patent grant or registration of a utility model or design patent are reserved.

Copyright © 2019, Gemalto M2M GmbH, a Thales Company

Trademark Notice

Gemalto, the Gemalto logo, are trademarks and service marks of Gemalto and are registered in certain countries.

Contents

1	Supported RF Bands.....	5
2	Floorplan of ALAS5-AM Rev. 1.2.....	6
3	Floorplan of ALAS5V-US Rev. 1.2.....	7
3.1	Schematic Differences to ALAS5-AM.....	8
3.1.1	Different Hardware Identification.....	8
3.1.2	Band 7 Removed.....	9
3.1.3	Band 13 Removed.....	11
3.1.4	Band 28 Removed.....	13
3.1.5	Band 29 Removed.....	15
3.1.6	Band 30 Removed.....	16

1 Supported RF Bands

This document is valid for the following products:

ALAS5-AM
ALAS5V-US

Both products use the same PCB.

ALAS5-AM is the “general” variant, containing all available RF band combinations, whereas ALAS5V-US uses only a subset of RF bands. The following table shows the available RF band combinations.

The respective components of the unused RF bands are not populated.

	ALAS5-AM	ALAS5V-US
850 MHz (GSM / B5)	X	X
900 MHz (GSM / B8)	X	X
1800 MHz (GSM / B3)	X	X
1900 MHz (GSM / B2)	X	X
Bd2 (FDD-LTE, HSPA)	X	X
Bd4 (FDD-LTE, HSPA)	X	X
Bd5 (FDD-LTE, HSPA)	X	X
Bd7 (FDD-LTE)	X	
Bd12 (FDD-LTE)	X	X
Bd13 (FDD-LTE)	X	
Bd28 (FDD-LTE)	X	
Bd29 (FDD-LTE, DL only)	X	
Bd30 (FDD-LTE, DL only)	X	
Bd66 (FDD-LTE)	X	X
GNSS	X	X

2 Floorplan of ALAS5-AM Rev. 1.2

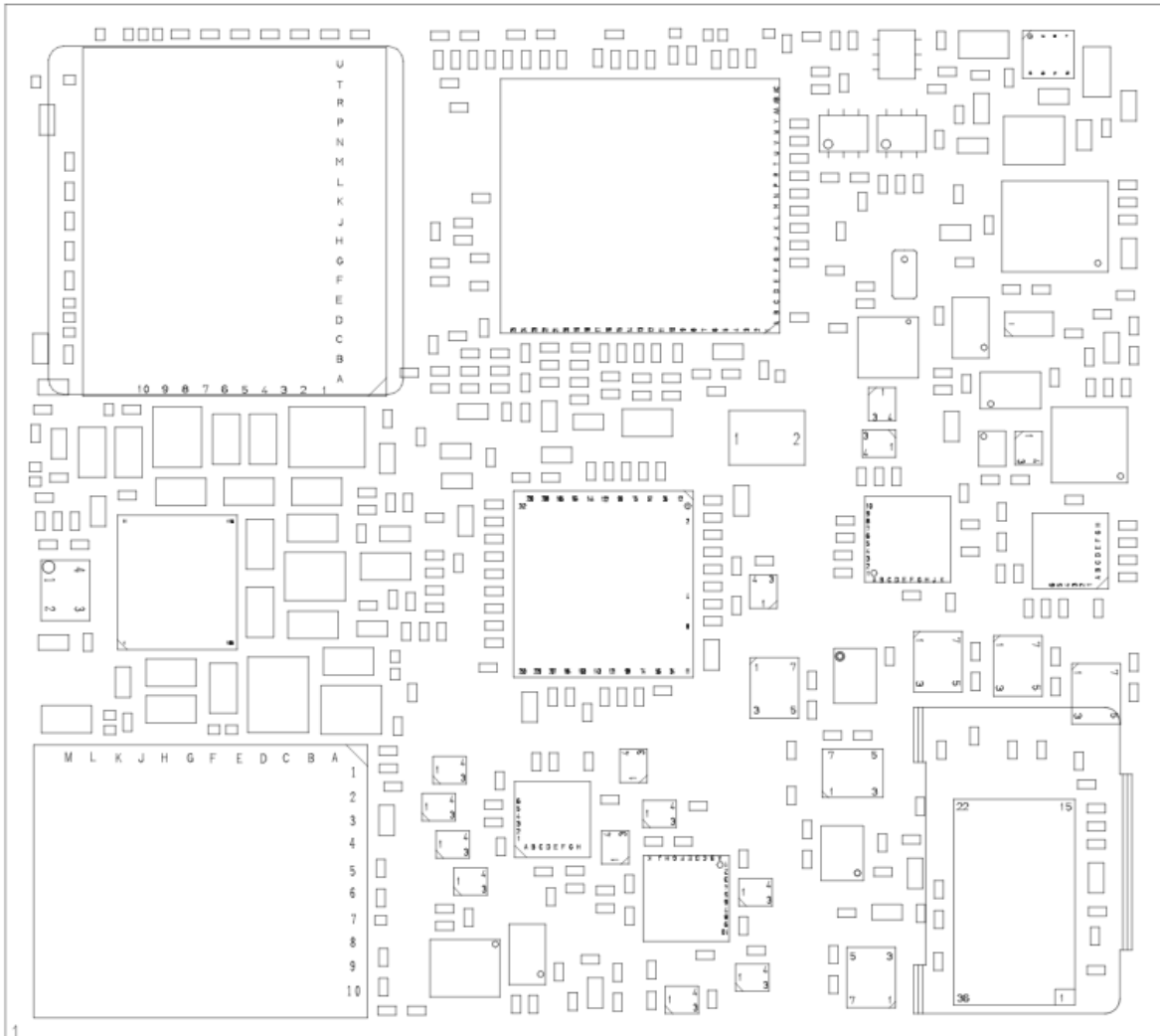


Figure 1: Floorplan ALAS5-AM

3 Floorplan of ALAS5V-US Rev. 1.2

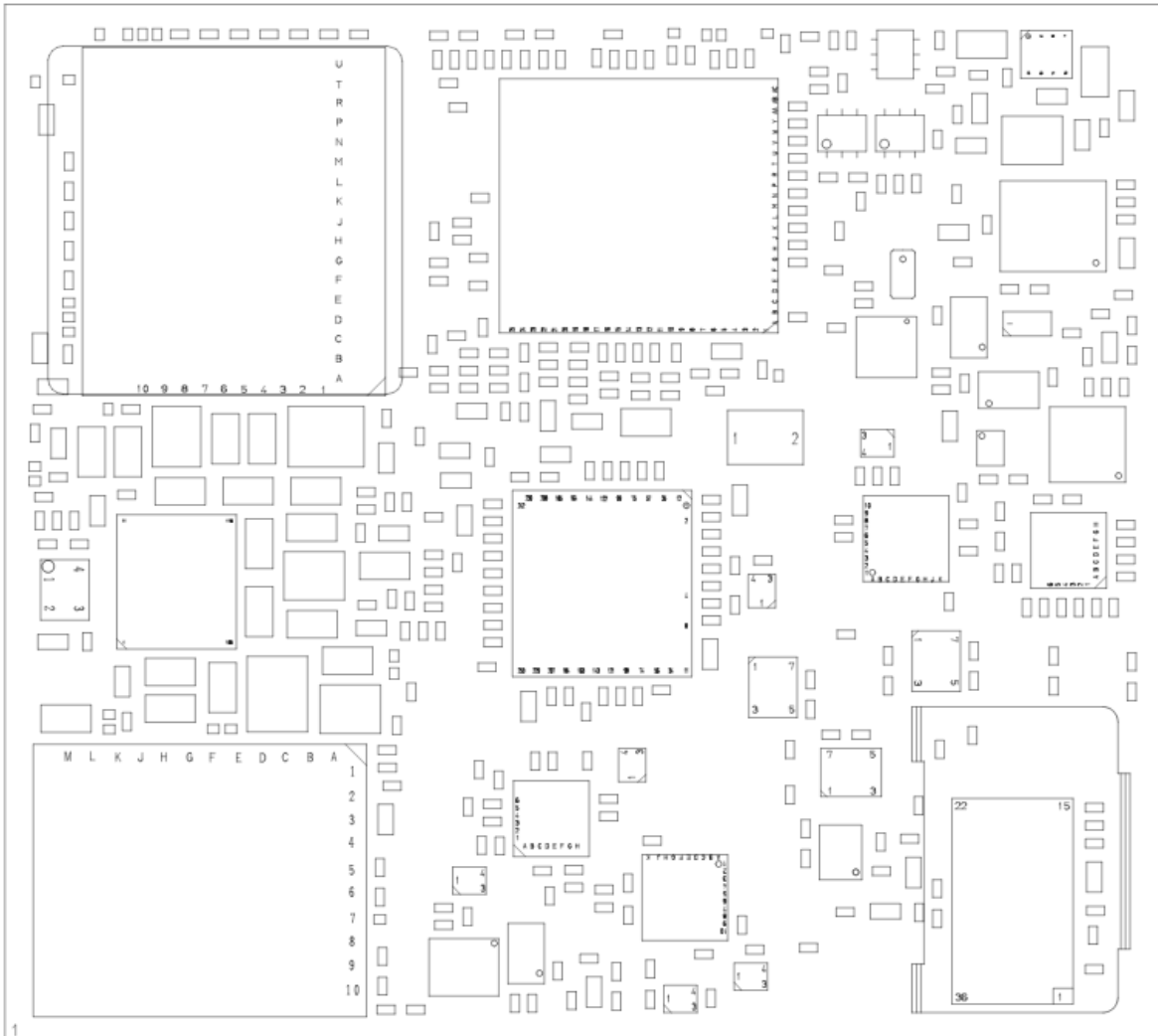


Figure 2: Floorplan ALAS5V-US

3.1 Schematic Differences to ALAS5-AM

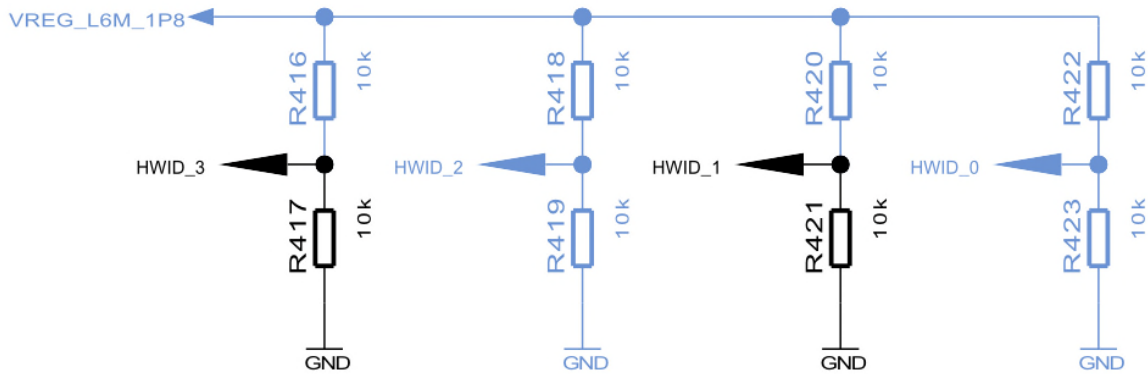
The below sections describe the schematic differences between ALAS5V-US and ALAS5-AM.

Note: Components in black are populated, components in blue are not populated.

3.1.1 Different Hardware Identification

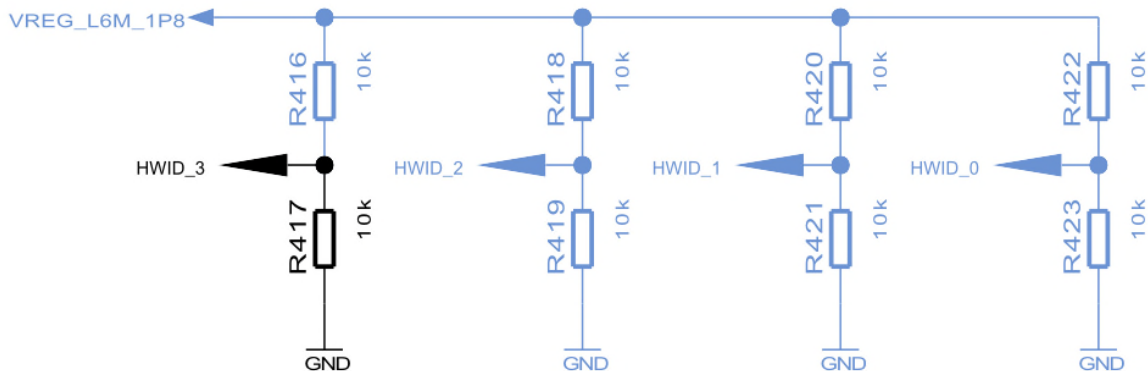
ALAS5V-US:

HW-ID



ALAS5-AM:

HW-ID

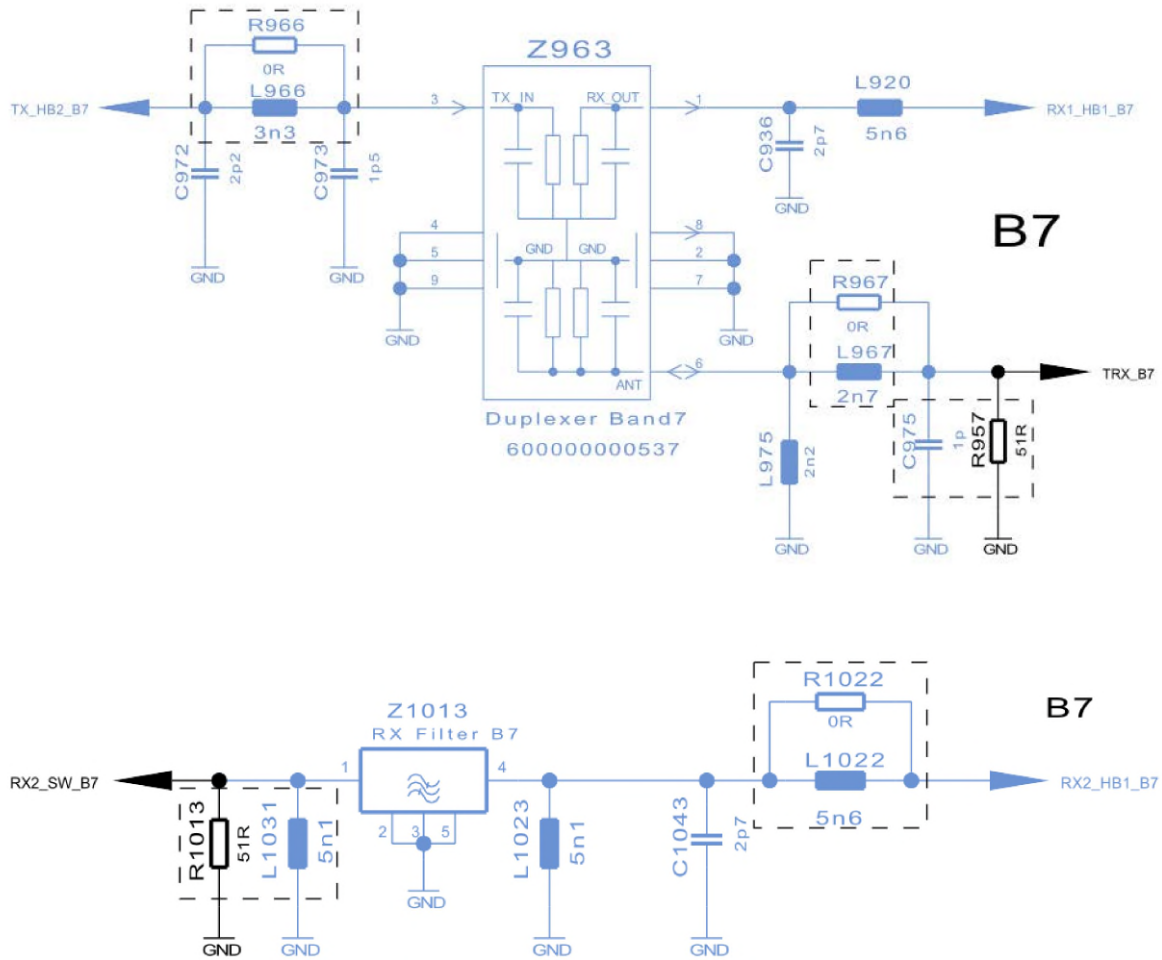


Affected test scope: No impact on GCF, PTCRB, FCC, R&TTE.

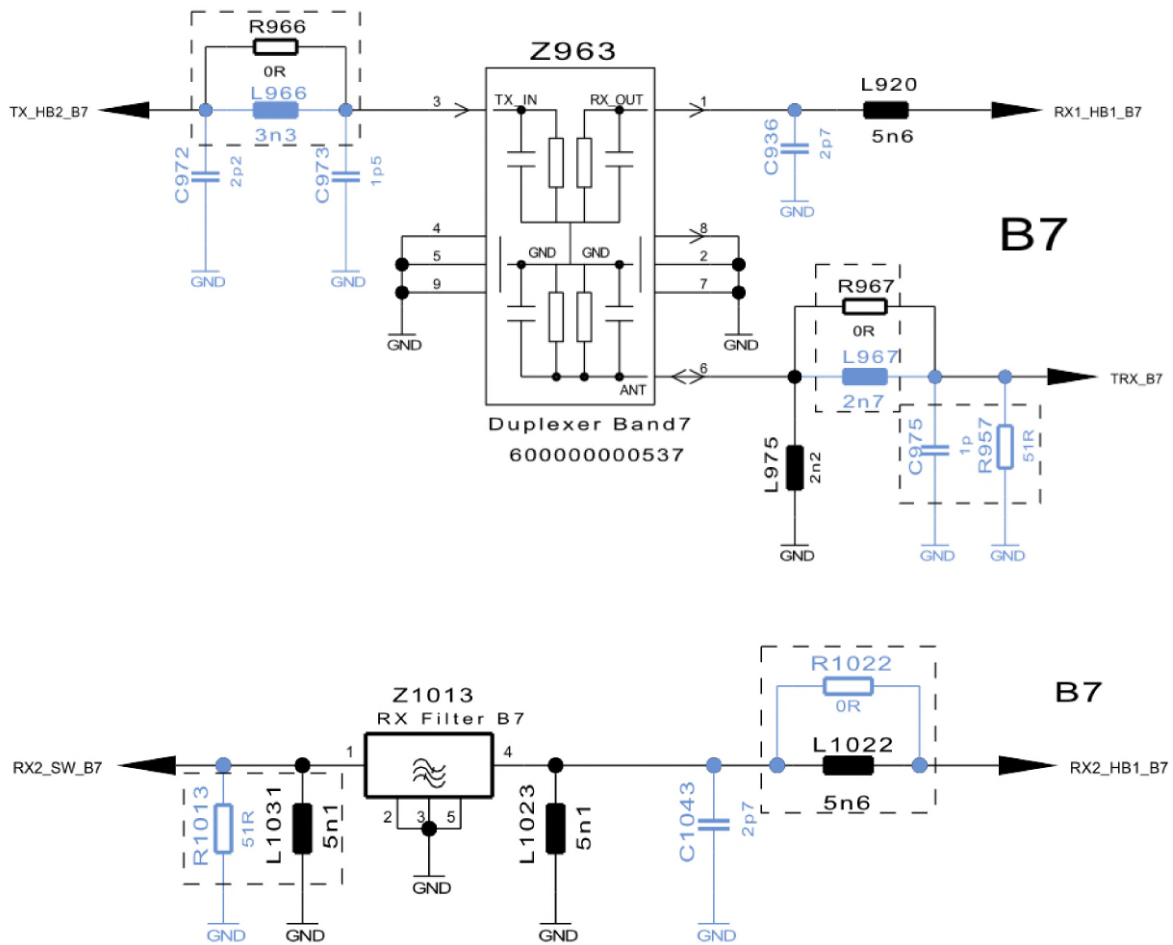
3.1.2 Band 7 Removed

A duplexer, a band filter, and matching elements were removed/replaced on ALAS5V-US. Also, LNA inputs now open received termination resistors.

ALAS5V-US:



ALAS5-AM:

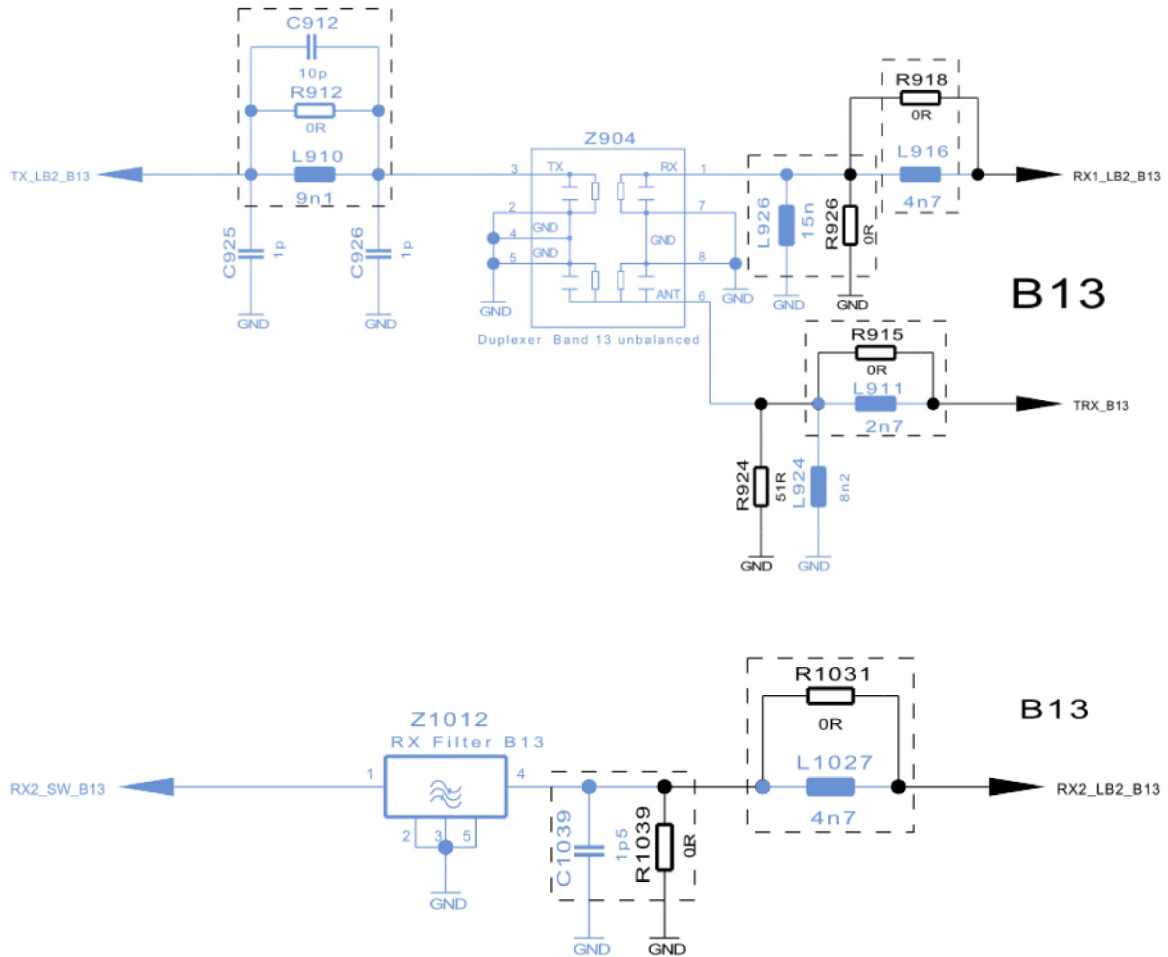


Affected test scope: No impact on GCF, PTCRB, FCC, R&TTE.

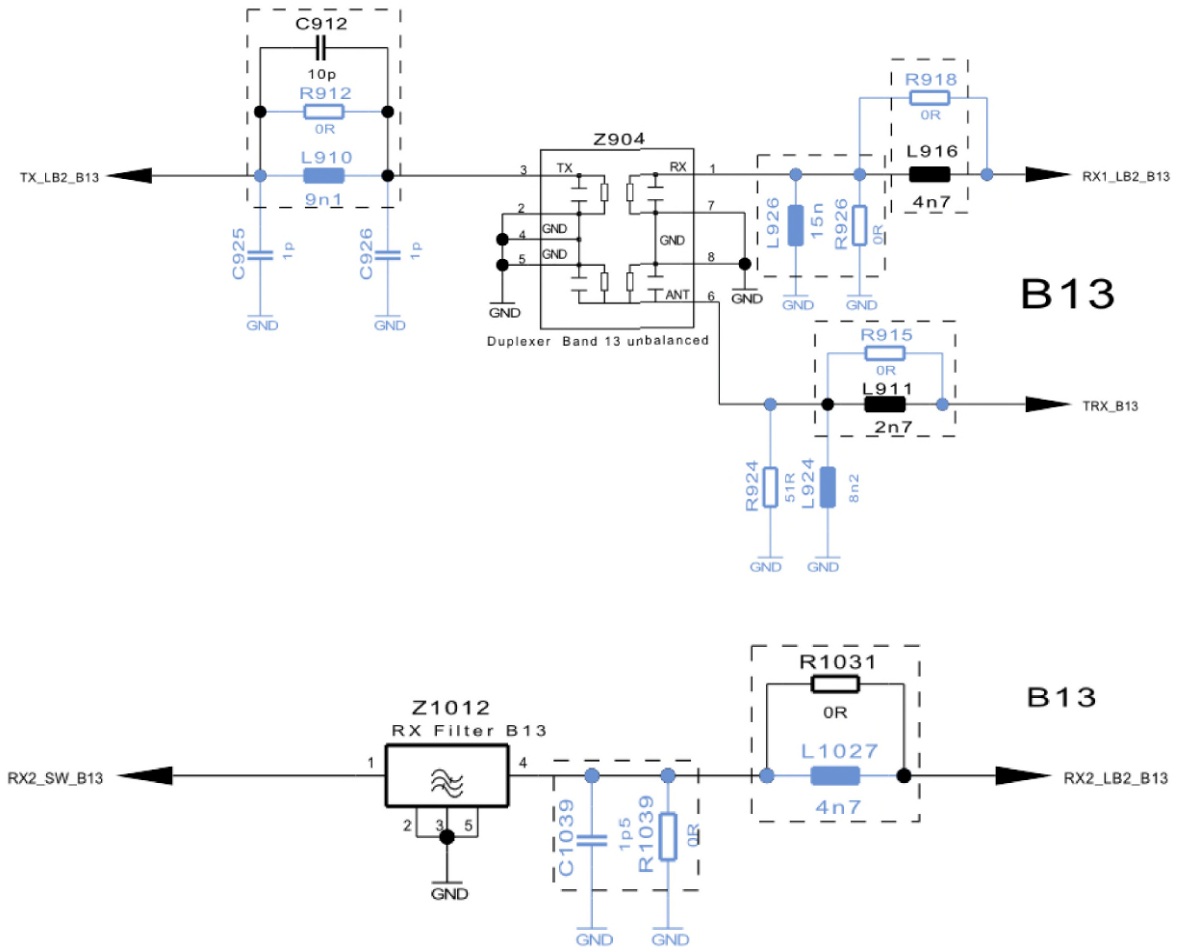
3.1.3 Band 13 Removed

A duplexer, a band filter, and matching elements were removed/replaced on ALAS5V-US. Also, LNA inputs now open received termination resistors.

ALAS5V-US:



ALAS5-AM:

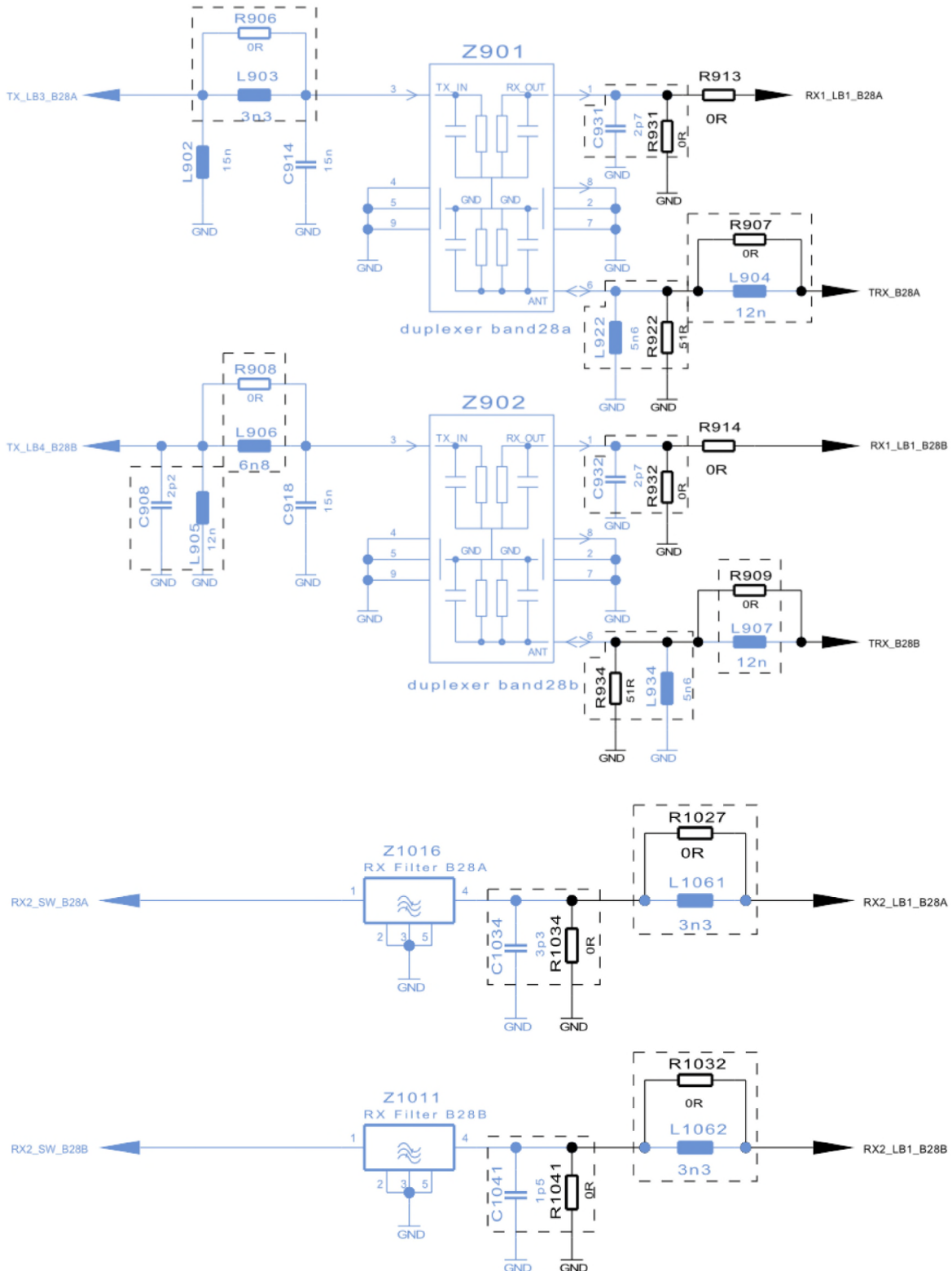


Affected test scope: No impact on GCF, PTCRB, FCC, R&TTE.

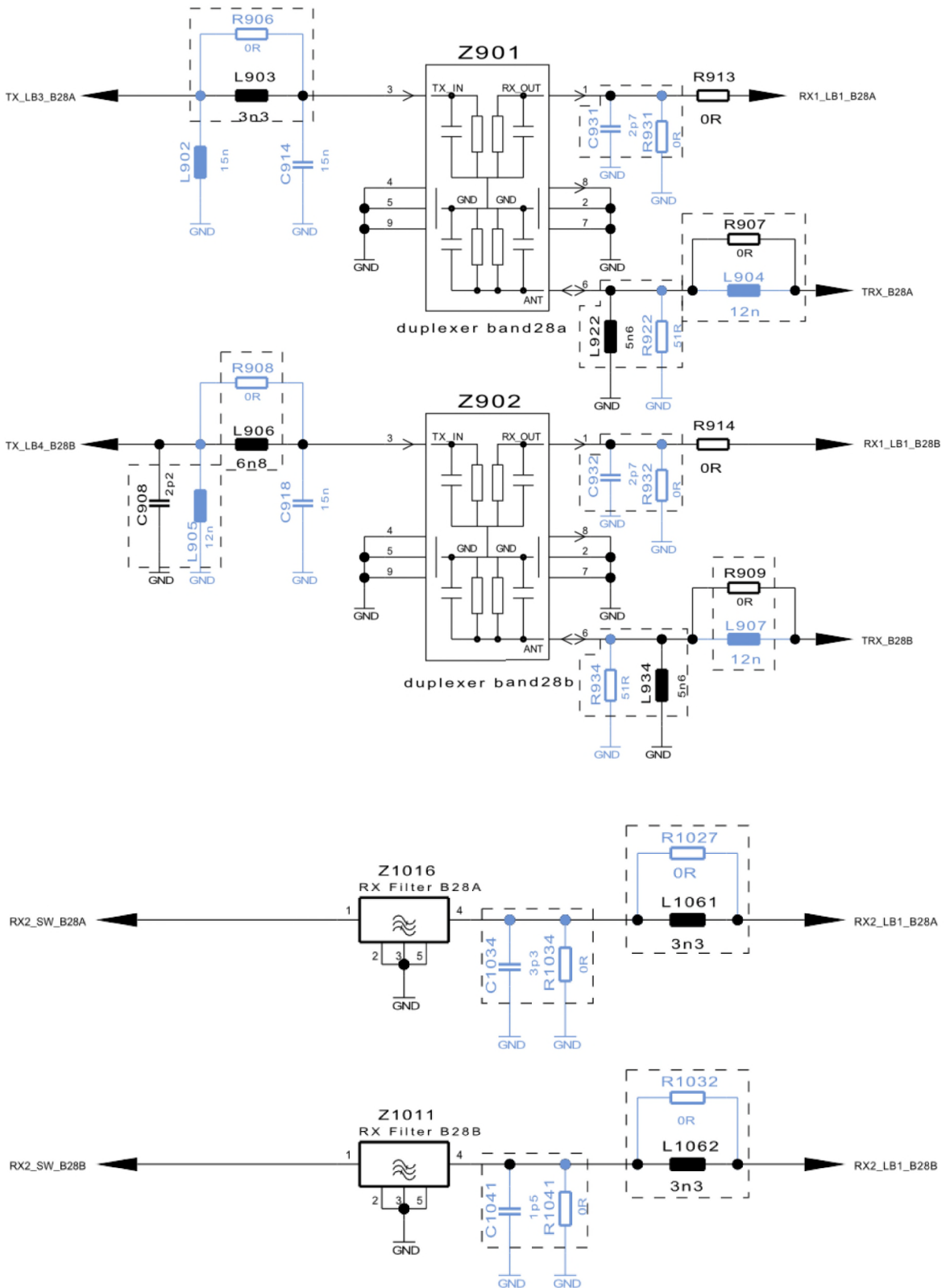
3.1.4 Band 28 Removed

Duplexers, band filters, and matching elements were removed/replaced on ALAS5V-US. Also, LNA inputs now open received termination resistors.

ALAS5V-US:



ALAS5-AM:

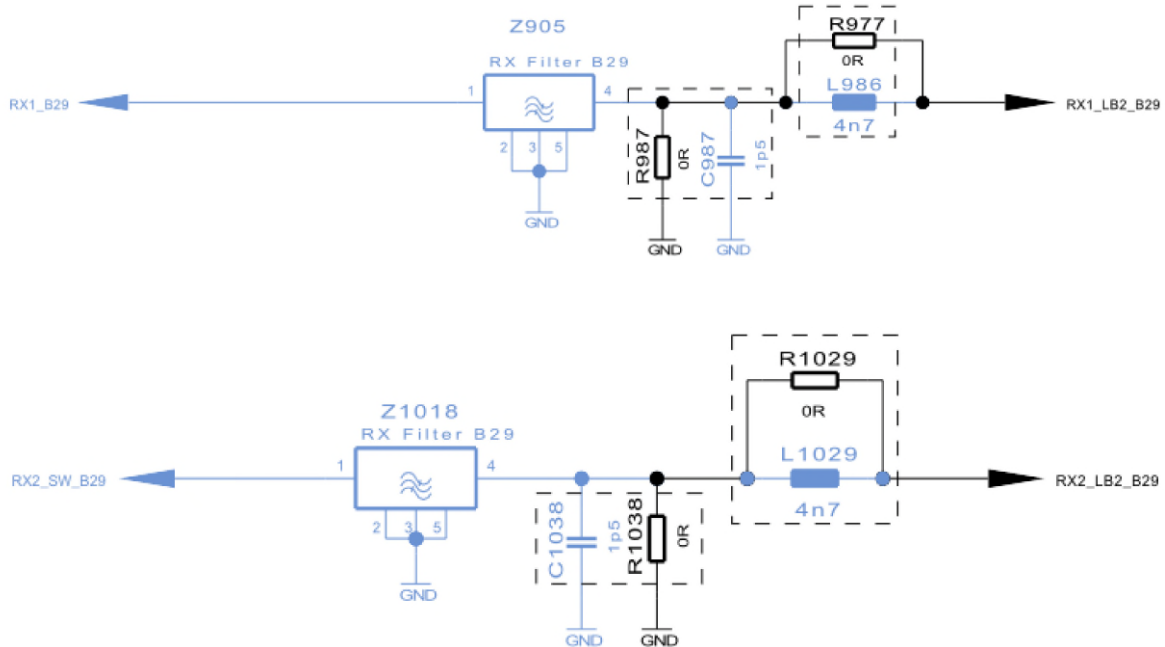


Affected test scope: No impact on GCF, PTCRB, FCC, R&TTE.

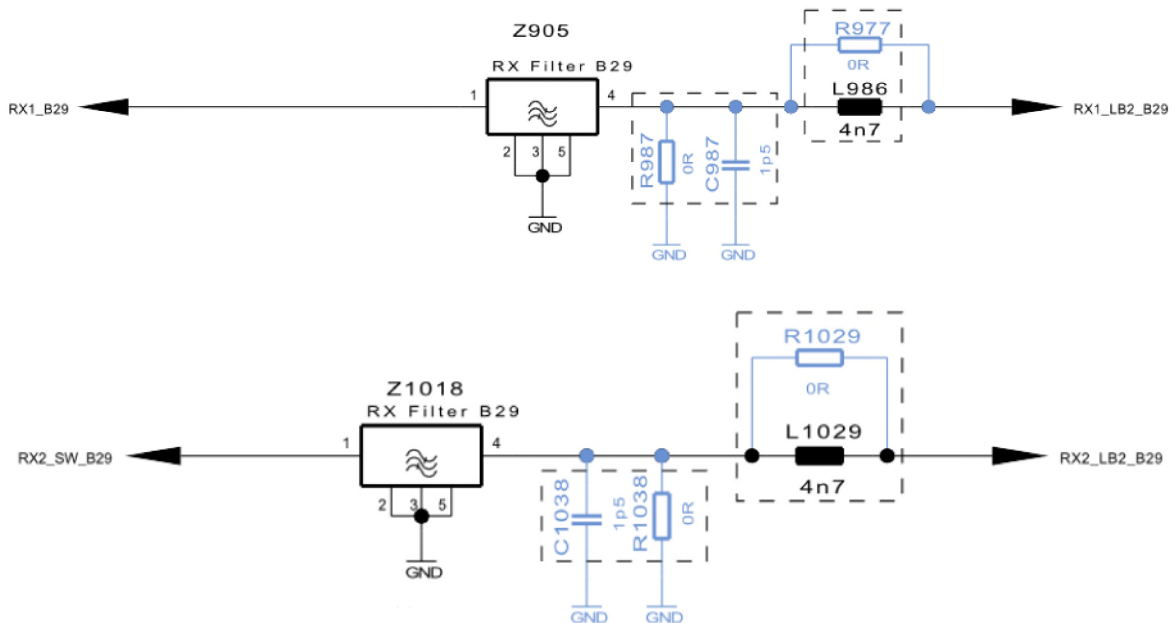
3.1.5 Band 29 Removed

Band filters and matching elements were removed/replaced on ALAS5V-US. Also, LNA inputs now open received termination resistors.

ALAS5V-US:



ALAS5-AM:

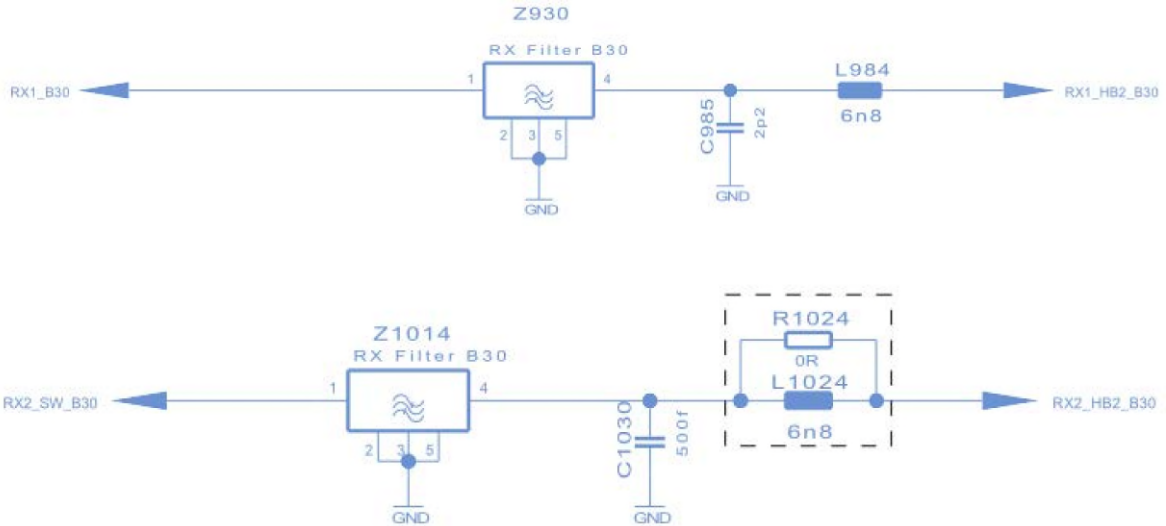


Affected test scope: No impact on GCF, PTCRB, FCC, R&TTE.

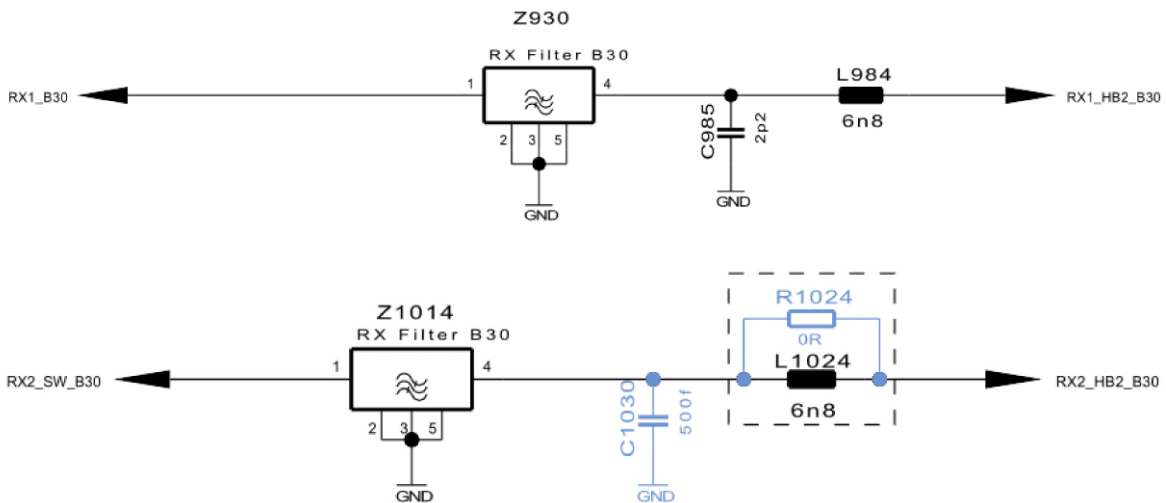
3.1.6 Band 30 Removed

Band filters and matching elements have been removed on ALAS5V-US.

ALAS5V-US:



ALAS5-AM:



Affected test scope: No impact on GCF, PTCRB, FCC, R&TTE.

About Gemalto

Since 1996, Gemalto has been pioneering groundbreaking M2M and IoT products that keep our customers on the leading edge of innovation.

We work closely with global mobile network operators to ensure that Cinterion® modules evolve in sync with wireless networks, providing a seamless migration path to protect your IoT technology investment.

Cinterion products integrate seamlessly with Gemalto identity modules, security solutions and licensing and monetization solutions, to streamline development timelines and provide cost efficiencies that improve the bottom line. As an experienced software provider, we help customers manage connectivity, security and quality of service for the long lifecycle of IoT solutions.

For more information please visit

www.gemalto.com/m2m, www.facebook.com/gemalto, or [Follow@gemaltotoT](https://twitter.com/Follow@gemaltotoT) on twitter.

Gemalto M2M GmbH
Werinherstrasse 81
81541 Munich
Germany